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JUST TRANSITION ACROSS BORDERS

A Case Study on the Ustecky region's coal phase-out and the potential of cross-border cooperation to mitigate its socio-economic challenges

Clara Maximiliane Kiess

B.Sc Public Governance across borders
Supervisor: Dr. Annika Jansoo
2nd Supervisor: Dr. Martin Rosema
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Abstract

In face of the climate change, the EU wants to become climate-neutral in 2050 with the Green Deal. A measure to ensure this, is the coal phase-out, which poses several socio-economic challenges on coal regions like the Ustecky region (CZ). Therefore, the EU developed the JTM to mitigate these transitional problems and also to increase the Union's cohesion. Another already more established measure to ensure cohesion is CBC. Hence, the question arises "To what extent can Cross-Border Cooperation contribute to the implementation of the Green Deal's Just Transition Fund in the Ustecky region?", especially since many coal regions are located near a border. To answer this question, the research is based on a single-case study of the Ustecky region, in which data was collected based on desk research. A theoretical framework on the potential of CBC to mitigate the socio-economic challenges was developed, which was applied on the case of the Ustecky region with the help of document analysis. The analysis concluded that CBC can contribute in various ways to mitigate the socio-economic transition challenges, especially in regards to regional competitiveness and funding. However, there is still development potential concerning the reduction of social inequalities, which ultimately would make a transition just.

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List of Abbreviations

CBC	Cross-border cooperation
CEU	Council of the European Union
CCI	Creative and Cultural Industries
CO ₂	Carbon Dioxide
EGD	European Green Deal
EP	European Parliament
ERDF	European Regional Development Fund
ESF	European Social Fund
EU	European Union
GDP	Gross Domestic Product
JTF	Just Transition Fund
JTM	Just Transition Mechanism
MMR	Czech Ministry of Regional Development
OECD	Organisation for Economic Co-operation and Development
R&D	Research and Development
SDG	Sustainable Development Goals
SME	Small and medium-sized enterprises
STEM	Science, technology, engineering, mathematics
TJTP	Territorial Just Transition Plan
UNFCC	United Nations Framework Convention on Climate Change

1. Introduction

Climate change and related environmental degradation is the greatest collective challenge humankind are facing today (UNFCCC, n.d.). The devastating effects are already felt globally and are likely to become more frequent and intense if no mitigating action is taken (European Union, n.d.). In line with its commitments under the Paris Agreement on Climate Change, the EU, therefore, introduced the “European Green Deal” in 2019. This set of policy initiatives aims at transforming the EU into a “modern, resource-efficient and competitive economy” that is greenhouse gas emission-free by 2050 (European Commission, n.d.-a). A measure to ensure this includes inter alia the closing of high emission fossil-fuel activities (Siddi, 2020) such as the phase-out of coal mining and the related electricity generation. Phasing-out coal is necessary as although it makes up only 15% of the overall European power generation, hard coal and lignite are responsible for up to 66% of the CO₂ emissions from the EU power sector and 15% of the overall emissions from the EU (Galgóczy, 2019). Additionally, the coal mining and power generation sector is declining as renewable energy production is becoming increasingly more competitive which also requires a coal phase-out from an economic point of view.

However, phasing-out coal comes with socio-economic impacts as whole regions, sectors, and individuals are engaged in this carbon-intensive industry. Coal-dependent regions such as the Ustecky region (Czech: Ústecký Kraj) are therefore to be among the most negatively affected by the energy transition as one of the economically most important industries in the region will decline. The coal region is situated in the North-Western part of the historical land of Bohemia in the Czech Republic close to the German border and is home to the North Bohemian coal basin, where most of the Czech lignite is mined. The lignite industry's importance is intensified by the fact that all steps of the lignite supply chain - from mining to power generation to the sale of electricity to consumers - are present in the region (Schulz et al., 2018). To counteract the arising negative socio-economic implications of the declining coal

sector, the region recognized the need for a transition strategy towards a more sustainable economy that reconciles environmental, social, and economic issues (Popp, n.d.). To support this regional restructuring endeavor, the EU set up the Just Transition Fund (JTF) for regions that are strongly affected by the energy transition following one of the EGD's leading tenets of "leaving no one behind". Thereby, a Just Transition should be ensured (A European Green Deal, n.d.) and the growth of regional inequalities avoided, which is in line with the EU's cohesion policy (Interreg-Baltic, n.d.).

Another major goal of the EU's cohesion policy is CBC. By offsetting the structural disadvantages imposed by their location in a country's periphery, CBC initiatives contribute to a harmonious, social, and territorial development of the EU as a whole (European Commission, n.d.-b). Therefore, CBC and the JTF pursue the same goal. Looking at their relationship is especially crucial since many coal regions, like the Ustecky region, are located in border regions. Socio-economic developments in the transitioning coal regions are therefore likely to also have implications on the neighboring regions across the border as the border regions are characterized by constant fluxes (Sousa, 2013). Since CBC and the JTF, both aim at overcoming social and economic problems, but with CBC being more established, the question arises if and how cooperation and capacity building across borders might enhance the facilitation of a Just Transition. Thus, the exploratory research question that is the foundation of this project is:

"To what extent can Cross-Border Cooperation contribute to the implementation of the Green Deal's Just Transition Fund in the Ustecky region?"

Consequently, in the course of the research the following sub-questions will be answered:

- Sub-question 1: What socio-economic challenges arise during the energy transition of coal regions?

- Sub-question 2: How can the socio-economic transition challenges be mitigated with the help of the Green Deal's Just Transition Fund in the Ustecky region?

Sub-question 3: What role can CBC play in transitioning the Ustecky region?

Answering the research question and the related sub-questions is scientifically and societally relevant. On the one hand, considering cross-border implications in the management of Just Transitions is innovative since scientific articles often just analyze the issue from a nation-centric perspective. However, solely national strategies are not sufficient as job markets, which play a key role in Just Transitions, are nowadays strongly influenced by global dynamics. Especially in the EU with the freedom of movement provided by the Single Market, it is crucial to look beyond the border and move away from a nation-centric analytical approach. On the other hand, this thesis contributes to improved governance in the realm of sustainable environmental politics, especially for energy transitions by generating knowledge on the potential of CBC for Just Transitions. This is highly socially relevant as effective and good climate change mitigation nowadays builds the basis for the attainment of human rights for future generations such as the right to health or an adequate standard of living.

After this introductory chapter, the relevant academic literature is discussed in the second chapter, where next to key conceptualizations, the first two sub-questions are theoretically addressed. In the third chapter the methodology will be presented, followed by a background section of the case. Before the conclusion where the research question will be answered, the fifth chapter discusses the main insights of the analysis.

2. Theoretical Background

2.1 Conceptualization of Key Terms

2.1.1 Conceptualization Cross-border Cooperation

CBC can be defined as any joint action between public and private local actors of two or more jurisdictions that foster their relation as neighbors, solve common transboundary problems, or manage shared resources (Sousa, 2013). CBC takes place in border regions, which are characterized by constant social, cultural, political, and economic fluxes although they are

separated by a border (Sousa, 2013). Additionally, border regions face similar structural problems like higher unemployment, weaker infrastructure, and less economic power derived from their positioning in a country's periphery (Committee of the Regions, 2007). Through CBC, these structural problems are counteracted (Sousa, 2013). Yet, CBC only occurs under specific circumstances: when there is an overlap of interests, a historical connection, a strong interdependence, or a solid political will to work together exists (Sousa, 2013).

2.1.2 Conceptualization Just Transition

In recent decades there has been increasing attention to the concept of Just Transition. Jafry et al. (2022) define the concept as “[...] both the process and the end goal of transitioning towards a more sustainable economy, ensuring that workers and communities are considered at all stages. The transition must be fair, just, and equitable for all.” (Jafry et al., 2022, p.1).

As suggested by this definition, the concept of Just Transition includes two main components. Firstly, the process of social dialogue at all levels should ensure that all relevant stakeholders are involved and no one is left behind (Galgóczy, 2019). This highlights the importance of public acceptance for a successful transition towards an economy free of CO₂. Secondly, the outcome should be a sustainable regional economy that has a long-term perspective with decent jobs and reduced inequality (Galgóczy, 2019).

Compared to approaches driven by solely economic concerns that often exacerbate social inequalities, the Just Transition concept also focuses on environmental justice. Implied in this is that the planning of a Just Transition must be a deliberate effort “to contribute to the goals of decent work for all, social inclusion and the eradication of poverty.” (ILO, 2015).

According to Cartwright (n.d.), Just Transition models should include a wide variety of measures ranging from compensation and resilient retraining of workers, over customized local economic development tools for affected regions, communities, and sectors, to ensuring a framework where social protection, human rights, and innovativeness are protected.

2.2 Socio-economic Transition Challenges in Coal Regions

Transitions towards a more sustainable economy have many positive impacts like increased well-being due to less environmental degradation and safer products, reduced inequalities, and long-term economic prosperity (Heyen et al., 2020). However, there are challenges connected to the disruption of economic and employment spheres that need to be tackled during the transitional period (Heyen et al., 2020).

In the literature there are four major socio-economic challenges transitioning coal regions face depicted, *namely a) regional clustered job losses b) increasing inequality c) lack of financial resources, and the general trend of d) reduced regional competitiveness*. All these challenges are interdependent and contribute to a negative regional development if they remain unmitigated. Mitigating the four socio-economic challenges presented below is of crucial importance as according to the RESET Framework developed by Everingham et al. (2020) a lower level of regional development reduces the capacity of coal regions to transition.

2.2.1 Transition Challenge of Regional Clustered Job Losses

The coal phase-out will lead to a substantive amount of job losses in coal mining regions. Job losses in general are associated with *income loss* during unemployment periods (Haywood et al., 2021). Additionally, former coal workers on average have *lower wages* and they face less job security in their new non-coal work sectors (Haywood et al., 2021). Workers consequentially face *risks related to finding re-employment, retraining, or early retirement*. Especially miners who are considered lower qualified workers have greater difficulties in finding new jobs in a transition, as well as other more vulnerable groups like migrant coal workers or women (OECD, 2012). So, on an individual level, the coal phase-out *threatens the coal-dependent employees' livelihood and quality of life* (OECD, 2012).

Affected regions, therefore, have to tackle the need for *re-skilling* programs and the *creation of secure jobs* e.g., by establishing personnel development centers and *agencies that provide job placement and job search services or support business formation* (Heyen et al., 2020). Furthermore, the regions must ensure that the new jobs emerge equally among different societal groups. Another challenge is that new jobs e.g., in the renewable energy sector have often *more problematic working conditions* compared to traditional energy sectors and are therefore less desirable (Olsen, 2012). The *new employment sectors should also be resilient* meaning that skills will be needed in the future as well (Heyen et al., 2020).

2.2.2 Transition Challenge of Increasing Inequality

Inequality refers “to the unequal rewards or access to opportunities for different individuals within a group, or between groups within society” (Scott, 2005, p.521). It is viewed as undesirable since it is a barrier to economic growth, political stability, international development, and greater climate change ambition (Markkanen & Anger-Kraavi, 2019). Inequalities exist normally alongside socially defined categories such as gender, age, ethnicity, religion, ability, or class (Markkanen & Anger-Kraavi, 2019) as this membership to a certain social category also increases people’s vulnerability and reduces the capacity to adjust to changing circumstances (Reckien et al., 2018).

In climate change discourse this means that climate change will exacerbate existing inequalities as the costs and benefits of the latter are inequitably distributed (Markkanen & Anger-Kraavi, 2019). Especially, low-income households will experience disproportionate effects of rising energy prices which could lead to less purchasing power, market exclusion, and sustainable investment opportunities that might create prosperity (Heyen et al., 2020). But also, women, migrants, and workers in high-risk physical environments are expected to be disproportionately affected (Jenkins, 2019). A challenge of energy transitions is therefore to ensure that burden-sharing is compensated and that no one is left behind (Galgóczi, 2019).

Connected to this is also the support and *inclusion of all relevant stakeholders* in the transition plans (Jenkins, 2019). Without their consent and collaboration, the achievement of environmental policies' goals is improbable and will also raise questions about the legitimacy of transition plans and decision-making bodies in general. Otherwise, there is a risk of local resistance as material and ideological interests related to the status quo are threatened (Hess, 2014).

Since coal mining is a male-dominated work sector women tend to be overlooked in energy transitions. Therefore, specific measures should be taken by the region to *create equal working opportunities*, e.g., attracting women towards STEM education via scholarships or by employing more women (Heyen et al., 2020).

Additionally, *vulnerable households should be protected from energy poverty* via redistribution of e.g., carbon or environmental tax revenues and social security benefits should consider increased energy prices (Heyen et al., 2020).

2.2.3 Transition Challenge of Lack of Financial Resources

During energy transitions, coal-dependent regions often experience a lack of financial resources. This is mainly due to two factors. Firstly, a coal phase-out comes with immense costs. The costs related to coal mining's negative impacts on nature, biodiversity, and landscapes are rarely borne by the polluter (Reitzenstein et al., 2022). Instead, public funds have to compensate for the substantial costs of recultivation – even decades after coal mining stopped (Oei et al. 2020).

The other reason for the potential lack of financial resources is the reduced tax revenues, which result from the decreased purchasing power of former coal employees (lower wages and rising unemployment), as well as the retraction of energy companies from the region (Heyen et al., 2020).

Moreover, investments into transitioning coal regions are less likely as the process is associated with lacking planning security (Reitzenstein et al., 2022).

However, sufficient financial resources are not only crucial for the success of the transition itself: A lack of funding also endangers the maintenance of existing regional public services like transport, education, and leisure infrastructure, which are important pull factors for new businesses and citizens (Heyen et al., 2020).

A challenge for regions is therefore to *secure funding for research and infrastructure projects* from the national or EU-governance level to *attract new businesses and industries* that in turn create *employment opportunities* and *economic diversification*. Besides, *entrepreneurship* should be promoted with consultancy, grants, and subsidies, and also *SMEs should be assisted* to facilitate the regional transition toward a green and resilient economy (Reitzenstein et al., 2022).

2.2.4 Transition Challenge of Reduced Regional Competitiveness

In the context of globalization, regions compete with each other to attract labor and capital to enhance regional development (Pike et al., 2016). Reduced regional competitiveness becomes visible when the regions are affected by out-migration and abandonment (Camagni, 2002). A coal phase-out can potentially boost emigration due to the lack of alternative employment opportunities - especially in regions with a mono-industrial character (Reitzenstein et al., 2022).

Moreover, the difficulties to maintain public services negatively shape the public's regional perception (Oei et al., 2020). Combined with a lower quality of air pollution and unclean rivers, which is often persistent in (former) coal regions, these soft location factors contribute to emigration and the region's lack of attractiveness for potential new workers.

To make a region more competitive, public spending on regional infrastructures (*transport, communication, leisure, and education*) should be increased (Heyen et al., 2020). Especially

investments in *research and education* institutions are important since they ensure the *availability of know-how* and therefore create *innovation capacity* together with local businesses (Heyen et al., 2020; Reitzenstein et al., 2022). Additionally, to increase public spending, regions could attract new and more diversified businesses via grants and tax incentives (Heyen et al., 2020).

2.3 CBC as a Mechanism to Resolve Socio-economic crises

As described in chapter 2.2, the coal phase-out has several socio-economic and resulting regional impacts, which unmitigated could produce a crisis. Next to the nation-based welfare state and other interventionist measures, CBC might be seen as a tool to mitigate socio-economic challenges. According to Medeiros (2018), this is mainly because CBC generally enhances regional development as it intervenes in a) economic competitiveness, b) social cohesion and inclusion, c) environmental sustainability, and d) territorial governance and articulation, which are the main dimensions of regional development.

Nevertheless, CBC alone cannot cause structural changes on the macro-level (Metis, 2020). However, it can provide stimuli for changes on the micro-level. Thereafter, it reflects on CBC's capacity to mitigate the socio-economic challenges of job losses, rising inequality, lack of funding and decreased regional competitiveness within this limited frame.

As aforementioned an effective measure concerning the mitigation of the socio-economic challenge of clustered job losses is the creation of new jobs. Many CBC programs focus on *job creation* as border regions are often characterized by high unemployment (Turnock, 2002). New employment opportunities are mainly achieved through business cooperation and educational exchanges, as well as through the growth of cross-border tourism (Turnock, 2002). In addition to providing new jobs, joint initiatives in the tourism sector contain also *training programs* that could help with reskilling (Turnock, 2002). Moreover, new employment

opportunities are accessible with enhanced cross-border commuting, which is often supported in CBC programs.

CBC can decrease inequality by broadcasting innovation and structural changes across the border according to Jeřábek (2018). This can mainly be explained by classical economic theory which suggests that

“[...] the removal of barriers of trade, capital flows, and labor mobility would lead to an equalization of production levels and living standards. Capital would move to depressed areas to take advantage of surplus labor and lower costs [and] labor would migrate to growing areas in search of employment and higher wages” (Keating, 1998, p.162).

CBC thus reduces socio-economic inequalities (Medeiros, 2015) and *promotes social and economic cohesion* (Sousa, 2013). The cohesion is also enhanced by investing in regional businesses, human capital, and job creation – which are often priorities in CBC (Medeiros, 2018). An effective measure to decrease inequalities is redistribution. However, this cannot be facilitated through CBC since redistribution is handled by the welfare state on the national level.

Moreover, CBC can help mitigate crises by increasing financial resources. This is mainly because CBC adds value by making the territory more politically visible through *the improved advocacy* stemming from coalition-building (Blatter, 2000). Consequently, this also helps to acquire additional funding for projects. Additionally, CBC is *financially supported by the EU* with the Interreg Program. The bordering regions have therefore more funds at their disposal (Smallbone & Welter, 2012). Border regions also get economically more competitive via CBC as the territory becomes more global (Johnson, 2009), which is needed especially in the framework of European economic integration (Barca, 2009). This internationalization also creates opportunities for businesses as it opens up new markets, funding mechanisms, qualified workers, and technologies (Smallbone & Welter, 2012), which strengthens the regional economy. Moreover, CBC can help reduce planning uncertainty, which is often present during

socio-economic crises. This planning uncertainty is reduced as CBC improves territorial governance by establishing a regulatory regime with harmonized standards and policies (Blatter, 2000). Furthermore, CBC helps with planning as it provides governance structures that are necessary for solving complex cross-border problems. Consequently, new businesses are attracted which will provide increased financial resources in the region via tax revenues. Moreover, the establishment of links between firms, universities, and governmental bodies within CBC increases the competitiveness of SMEs in the border region (Nave & Franco, 2021).

This increased competitiveness can mainly be attributed to the fact that CBC *improves the innovation and R&D capacities* of enterprises (López et al., 2015; Nave & Franco, 2021). Through the network-building of social entities, individuals, cities, and firms across borders the innovation capacity and expertise are increased through knowledge-sharing, exploiting complementary assets, and transferring best practices (Olszewski 2016; Sousa, 2013). Border regions that are contact zones with synergetic needs and means create therefore an innovation pole and lead to R&D improvement (Blatter, 2000; Segarra-Blasco & Aranzo-Carod, 2008). This increased innovation capacity contributes to making the region more competitive, which helps border regions in the mitigation of a socio-economic crisis. Furthermore, CBC increases regional competitiveness by *improving soft location factors*. Infrastructure projects are often a priority (Sousa, 2013) and CBC also facilitates cultural exchanges and cooperation projects which makes a region more attractive culturally. Consequently, the socio-economic challenge of brain drain can be mitigated to some extent.

2.4 Building a Theoretical Framework

Based on the theoretical discussions a theoretical framework (Table 1) was developed which builds the basis for the analysis. The first column represents the four main socio-economic challenges for transitioning coal regions (Chapter 2b) that were derived from the literature.

Namely, a) regional clustered jobs losses as the coal miners' skills are not needed anymore, b) increasing inequality because of the disproportionate effects of energy prices on vulnerable groups, c) the lack of funding caused by the discontinuation of tax revenues and high needs for investments, as well as d) the reduced regional competitiveness that is caused by the lack of economic diversification and reduced spending.

The second column gives an overview of measures that can be taken to mitigate those main transition challenges, which are also based on chapter 2.2. However, only measures were chosen where CBC has the potential to affect based on the discussion of the potential of CBC as a mechanism to resolve socio-economic crises in chapter 2.3.

The third column elaborates shortly on how cross-border cooperation can specifically affect transition challenges.

Table 1: Theoretical Framework based on the Literature of 2.2 and 2.3

Socio-economic challenges for transitioning coal regions and related tasks		Which transition challenges CBC can have an effect upon	How CBC affects the challenge exactly
Regional clustered job losses			
	Risks finding reemployment	Creating new jobs	CBC creates jobs through business cooperation and educational exchanges, training programs (e.g., for tourism), enhanced cross-border commuting
	Need to learn new skills	Retraining, reskilling programs	
	Setting up counseling services		
	Accessing early retirement schemes		
	Providing equal employment opportunities for vulnerable groups		
	Non-coal jobs having lower wages and more problematic working conditions		
	Resilient competencies are needed		
Increasing inequality			Capital flows and labor mobility across the border equalize production levels and living standards. investing in regional
	Ensure that burden-sharing is fair and compensated		
	Inclusion of relevant stakeholders	Promoting social cohesion	

	Create equal working opportunities for vulnerable groups		businesses, human capital, and job creation
	Redistribution measures to support low-income households		
	Increasing energy efficiency		
Lack of financial resources			
	Create planning security	Providing harmonized framework across borders	<p>CBC opens up new markets, funding mechanisms, qualified work, and technology</p> <p>Coalition-building across the border enhances advocacy</p> <p>CBC improves territorial governance by reducing uncertainty through harmonizing standards and policies</p>
	Secure new financial sources	Secure EU funds by improving advocacy	
	Increase tax revenues	Attract new businesses with planning security	
	Diversify the regional economy		
	Create employment opportunities	Job creation, Support business formation	
	SME support	Increasing SME competitiveness	
Reduced regional competitiveness			
	Increase opportunities for leisure time	Improves cultural offer	<p>Network-building of social entities across the border develops innovation capacity through knowledge sharing, exploiting complementary assets, and transferring best practices</p> <p>CBC programs often have infrastructure projects as a priority</p> <p>CBC facilitates cultural exchanges and events which makes a region more culturally attractive</p>
	Improve public infrastructure	Improving transport and infrastructure	
	Improve quality of childcare		
	Create innovation capacity	Improves innovation capacity of enterprises, Creating a shared innovation pole	
	Improve research and education	Improves R&D capacities	

3. Methodology and Data Sources

This section elaborates on the research methods that were chosen to answer the aforementioned research question. Firstly, the research design and its justification will be

presented, followed by the motivation of the case selection. Hereafter follows the description of the data collection methods and the data analysis.

3.1 Research Design

To answer the research question, a case study of the Ustecky region was conducted (CZ). The case study is bounded to the region’s coal phase-out, socio-economic problems, and its involvement in the Interreg Program between Saxony and the Czech Republic and the Euroregion Elbe-Labe. Since the introduction of the EGD dates back only to 2019, the case study highlights only recent developments. Through this empirical analysis, the research design aims at the generation of theoretical knowledge on the potential of CBC for Just Transitions. As there is no one-size-fits-all approach for regional Just Transitions a case study suggests itself to investigating the particularities of one border region. To draw more generalizable lessons, however, the inclusion of more cases is necessary. Such a research design exceeds the time frame and scale of the bachelor thesis. Hence, only a single-case study is conducted.

3.2 Case Selection and Description

Since this research aims to provide insights into the relationship between Just Transitions and CBC based on theoretical assumptions a common case study design was chosen for the research. Therefore, the case of the Ustecky region in the Czech Republic was selected based on two factors.

Firstly, a focus of this thesis is the concept of Just Transition, which is anchored in the EGD with the JTM. Therefore, the selected case needed to be a transitioning coal mining region in the EU.

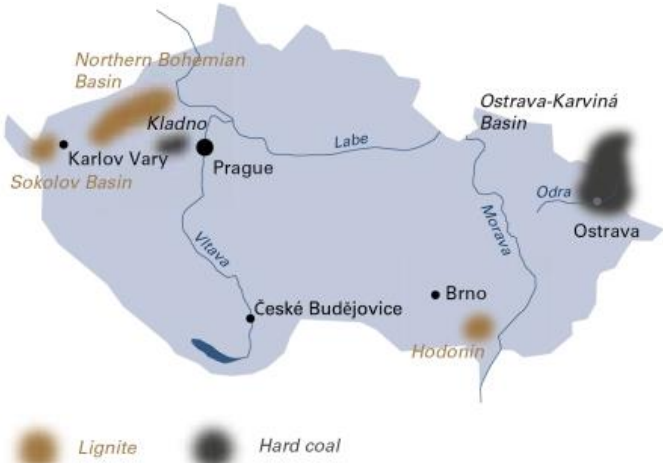


Figure 1: Map of Czech Coal Regions

Therefore, the selected case needed to be a transitioning coal mining region in the EU.

The Ustecky region is the main lignite mining region in Czechia with six open-cast mines in the North Bohemian Coal Basin, where 52.3 million tons of lignite (2015) are produced (Schulz et al., 2018). Coal mining and processing in the region date back to the mid-19th century and peaked in the 1980s (Heuer, 2018). Since then, lignite production is declining (Heuer, 2018), which causes and intensifies socio-economic problems. The Regional Permanent Conference in the Ustecky region developed therefore a preliminary Territorial Just Transition Plan (TJTP), which wants to mitigate those socio-economic problems. Thus, the Ustecky Region is an example of a transitioning coal mining region in the EU. Additionally, there is a lack of Central and Eastern European case studies (Jenkins, 2019) which is why the Ustecky region is even more interesting to look at.

The second selection criterion was that the region needed to be a border adjacent coal region. Since the Ustecky region borders the German federal state of Saxony also the second selection criterion was met. Especially since the Ustecky region is embedded in the Interreg Program Saxony-Czech Republic, which is one of the key instruments of the EU to support CBC (Interreg, n.d.). Moreover, the border region is particularly interesting as the levels of socio-economic development are differing significantly on the different sides of the borders (Metis, 2020). CBC is therefore specifically needed in this area to ensure territorial cohesion and regional sustainable development on both sides.

3.3 Data Collection

In the course of the research, documents were collected with desk research targeting three types of documents to ensure the triangulation of the qualitative data: Scientific articles, policy and strategy papers, and reports. Databases used in this desk research were “Google.Scholar” and “Google” because of their large coverage of academic literature and other relevant information. Therefore, only secondary data was collected. In the following for each type of document keywords and inclusion and exclusion criteria are highlighted.

Scientific articles were collected on the topic of socio-economic challenges in the Ustecky region. Keywords used for the data collection, therefore, included “Socio-economic development Ustecky” or “socio-economic problems coal region Ustecky”. To select the relevant documents, two inclusion and exclusion criteria were used. Firstly, only documents published after 2017 were included, which ensures that the data collected is still relevant today as socio-economic indicators can change quickly. Secondly, only documents written in English, German, and Czech were considered as these are the relevant languages for this case study. Czech documents were translated with the software “DeepL”. After applying these criteria, the most relevant scientific articles to describe the socio-economic challenges in the Ustecky region were Schulz et al. (2018) and Kuchař & Balek (2019).

The strategy papers used in this research were manually selected based on their relevance. Firstly, the TJTPs in the Ustecky region were needed since the focus of this thesis is the mitigation of the challenges through the Green Deal’s JTF. To access the fund, member states need to develop TJTPs, which is further explained in Chapter four. In Czechia, the Ministry for Regional Development (MMR) is responsible for developing the TJTP. Therefore, one of the main strategy papers was the preliminary TJTP published by the MMR (MMR, n.d.). Next to other coal regions in Czechia, the strategy paper contains a section on specific measures for the Ustecky region that are further explained in the TJTP published by the Regional Permanent Conference of the Ustecky Region (ICUK, 2021). Therefore, also this strategy paper was included since the Ustecky region makes up the main focus of this thesis. Secondly, the strategy paper of the Interreg program Saxony-Czech Republic (SN-CZ, 2015) was manually added since the Interreg Program V-A is considered one of the most relevant instruments of the EU to support CBC and the Ustecky region is included in the program area. As the program document for the program period 2021-2027 is not published yet, the Interreg Program Document 2014-2020 (SN-CZ, 2015) was included to gather information on the most important CBC measures

and goals. The document is retrieved from the website of the Interreg Program Saxony-Czech Republic.

Moreover, reports were collected in the course of the desk research, to identify further CBC measures. The main source consisted thereby the report by Metis (2020) which is a socio-economic analysis of the Interreg program area. It was manually selected from the Interreg's website since it gives an outlook on the upcoming program period 2021-2027. The selected reports mainly make up the annual reports by the Euroregion Elbe-Labe, which summarize the most relevant activities conducted. To provide a consistent timeframe with the CBC measures in the Interreg program, annual reports starting from 2014 were retrieved from the Euroregion's official website. The Euroregion was selected since it covers the Ustecky region and includes the municipal level of CBC measures. This is important since CBC is characterized by multi-level governance. To increase findings on the socio-economic challenges a keyword search was conducted based on the keywords "Just Transition Czech Republic". The selection criterion for the reports thereby looked at the content. Many documents about the Czech Just Transition focus on the process of stakeholder involvement. However, the first sub-question aims at generating knowledge on the socio-economic transition challenges, so documents on stakeholder inclusion which is more a political, not a stakeholder challenge were not relevant. Therefore, only documents addressing the socio-economic situation in the Ustecky region were included, whereby Heuer (2018) made up the main source.

Moreover, to include recent quantitative data on the socio-economic situation in the Ustecky region another keyword search was conducted with the keywords "Labour market Czechia (or "Czech Republic" or "Ustecky"). The main sources, therefore, included excel files by the Czech Statistical Office (CZSO 2021) as well as the website of the European Commission (n.d.-c). Both sources were included as both the CZSO and the Commission are reliable organizations to collect, analyze, and disseminate statistical information.

In general, desk research is a low-cost method to obtain unobtrusive and non-reactive data. However, the document selection can be biased.

3.4 Data Analysis

To answer the research question, a document analysis was conducted. Document analysis is a systematic procedure for reviewing and evaluating documents. It is a qualitative method where data is examined and interpreted to create meaning and understanding (Corbin & Strauss, 2008). As aforementioned, this case study examines to what extent the theoretical dispositions about the potential of cross-border cooperation for the Just Transition of coal regions can be found in the empirical data on the Ustecky region. Therefore, the theoretical framework was operationalized into specific codes, which were then applied to the empirical data through the software “Atlas.ti”. In addition to these deductively derived codes, also inductive coding is used to capture all relevant data (Mayring, 2015). Thus, the analysis is facilitated with mixed coding. The used coding scheme is enclosed in the Data Appendix to increase the research’s reliability. The findings of the document analysis will be structured into three parts, each answering one sub-question.

4. Background on The European Green Deal and the Just Transition Mechanism

The EGD is the Union’s sustainable growth strategy that wants to mitigate the consequences of climate change and environmental degradation. It was published in 2019 by the European Commission and aims at the transformation of the EU into a fair and prosperous society with a modern, resource-efficient, competitive, and most importantly emission-free economy (European Commission, n.d.-a). By recognizing the need for transformation across all sectors, the EU wants to contribute to the fulfillment of the SDGs and its member states’ commitments to the Paris Agreement (EP & CEU 2021-b).

Past deindustrialization processes have shown, however, that transitioning territories and vulnerable groups face the threat of being left behind by the transition process. A successful

and socially accepted transition, however, must be fair and inclusive (EP & CEU 2021-b). Therefore, to ensure that, the Commission established the JTM within the framework of the European Green Deal (EP & CEU 2021-a).

The JTM wants to alleviate the social and economic effects of the transition fairly and inclusively by focusing on the most negatively affected regions (EC, n.d.-c). It includes three pillars: (1) The JTF to provide grants for the most affected regions, (2) the InvestEU scheme to access private investments, and (3) a loan facility to leverage public financing (Cameron et al., 2020).

While pillars (2) and (3) are broader support mechanisms, the JTF should contribute directly to “alleviate the impact of the transition by financing the diversification and modernization of the local economy and by mitigating the negative repercussions on employment” (EP & CEU 2021-b, p.2).

The JTF is planned to make up €19.2 billion for the period of 2021-2027 (European Commission, n.d.-d). Whereas the majority of this fund is financed under the multiannual financial framework, €10.87 billion stems from the post-covid recovery instrument NextGenerationEU (EP & CEU 2021-b). Additional resources from the ERDF and the ESF Plus are also available for the Member States (EP & CEU 2021-b). Access to funds is conditional on Member states’ clear commitment to the transition, which has to be in line with National Energy and Climate Plans, as well as on the effectiveness of proposed measures (Cameron et al., 2020).

Although the JTF should cover all Member States, the distribution of financial means should focus on the most affected regions (Cameron et al., 2020). This recognizes the different starting points and capacities of transitioning regions. The Commission considers carbon-intensive regions with challenges related to e.g., potential job losses, mining production, and negative economic development as the most affected regions. Thereby, the Just Transition Mechanism also aims at preventing growing regional disparities, which is in line with other EU objectives

of social, economic, and territorial cohesion (EC n.d.-e). The main priorities of the allocation of the JTF are a) social support, b) economic revitalization, and 3) land restoration (Cameron et al., 2020). An overview of possible measures that are financed by the JTF is presented in

Table 2: Measures funded by the JTF (derived from Cameron et al., 2020)

Economic revitalization	<ul style="list-style-type: none"> a) productive investments in SMEs, including start-ups, leading to economic diversification and reconversion (b) investments in the creation of new firms, including through business incubators and consulting services (c) investments in research and innovation activities and fostering the transfer of advanced technologies; (d) investments in the deployment of technology and infrastructures for affordable clean energy, in greenhouse gas emission reduction, energy efficiency and renewable energy; (e) investments in digitalization and digital connectivity; (g) investments in enhancing the circular economy, including through waste prevention, reduction, resource efficiency, reuse, repair and recycling;
Social support	<ul style="list-style-type: none"> (h) upskilling and reskilling of workers; (i) job-search assistance to jobseekers; (j) active inclusion of jobseekers;
Land restoration	<ul style="list-style-type: none"> (f) investments in regeneration and decontamination of sites, land restoration and repurposing projects

Since the JTF is under shared management, the specific allocation of funds is established via a dialogue between the Commission and the Member States (EP & CEU 2021-b). The latter mentioned have to present TTJTPs which identify the most affected territories, the specific regional challenges, and planned mitigation measures that the JFT will be used for (EP & CEU 2021-b).

According to the partnership principle, all relevant stakeholders should be included via a social dialogue during the planning, implementation, and evaluation of the TJTPs (European Commission, 2019). Stakeholders can include regional and local authorities, social and

economic partners, civil society, and research institutions (European Commission, 2019). Also, gender equality should be promoted and young people involved in the transformation process (EP & CEU 2021-b). To share best practices and knowledge the Commission also established the Just Transition Platform, and the Initiative for Coal Regions in Transition (EC n.d.-e).

5. Analysis

5.1 Socio-Economic Transition Challenges in the Ustecky Region

This section examines whether the transition challenges identified in the theory part are present in the Ustecky region by analyzing relevant literature and statistical data.

In Czechia, coal regions in general are the most socio-economically disadvantaged regions in the country (Heuer, 2018). Although the population share of the Ustecky region is around 7.7% of the overall population (Schulz et al., 2018), the region contributes only 5.3% to the GDP of the Czech Republic (CZSO, 2021-a). One major reason contributing to this disproportionate contribution to the national economy is the high level of unemployment in the Ustecky region (European Commission, n.d.-c). Although unemployment was decreasing in the years before Covid-19, the unemployment rate in the region stood at 5.46% in 2020, the second-highest rate in the Czech Republic (CZSO, 2021-a). The unemployment rate was estimated at 5.99% in March 2021 (European Commission, n.d.-c). Although the Czech Republic generally is characterized by a high number of job vacancies, in the Ustecky region, there are more unemployed people than job vacancies (Heuer, 2018). Most affected by the absence of work are young people, who recently graduated from school. According to the Czech Statistical Office, 9% of the people aged 15 to 24 and 5.2% from 25 to 34-year-olds were without employment in the Ustecky region (CZSO, 2021-b). People with only primary education (CZSO, 2021-b) and slightly more women (53% of the unemployed) make up the majority of the jobless. This socio-economic challenge of unemployment is expected to intensify as the coal phase-out will harm employment levels. Between 2007 and 2017 alone, jobs related to the

coal industry were halved in the Ustecky region. Currently, there are still 9731 people directly and indirectly employed in the coal sector, which make up around 3% of the overall employed in the region (Heuer, 2018). Heuer (2018) also estimates that closing a mine would contribute 7-10.5% to the general unemployed. Therefore, the Ustecky region has to provide alternative employment structures. However, wages in non-coal sectors are considerably lower (947€) than in coal-related jobs (mining: 1109€; energy production 1413€) (Schulz et al., 2018). As coal miners are considered low-qualified workers, they will face even more difficulties in finding reemployment as most unemployed people have only primary education. Additionally, reskilling and retraining in the Ustecky region is complicated by the fact that there are only two universities and only 76 vocational programs present regionally (CZSO, 2021-a). Furthermore, the number of vocational training courses is decreasing in the region. The transitional challenge related to job losses and reskilling that was identified in the literature is therefore present in the Ustecky region and will have substantial impacts on the already high unemployment rate.

Moreover, the Ustecky region is characterized by a relatively high proportion of socially disadvantaged people (Schulz et al., 2018,). This social structure can mainly be attributed to the low level of education in the Ustecky region, which ranks as the worst educational level in the Czech Republic. Thereby, only 13% of the region's inhabitants hold a university degree, 27% have a secondary education, and 60% have a medium level of qualification to none (Kuchař & Balek, 2019). This social structure is likely to increase as the majority of low-skilled workers remain in the region, whereas people with higher education tend to emigrate. Especially women emigrate, as they earn less and are more affected by unemployment in the region (Schulz et al., 2018, Kuchař & Balek, 2019).

As aforementioned, the Ustecky region belongs to the economically weaker regions in Czechia compared to its population size (Schulz et al., 2018). In addition to being a coal region, this weak economic performance is linked to the poorly managed restructuring of the economy after the decline of the communist regime in 1990 (Kuchař & Balek, 2019). Nevertheless, the

Ustecky region still has the fourth-highest tax revenues in the Czech Republic with 20.027 million CZK (810,52€), which is disproportionate to the population size as the region only contributes 6.94% of the total revenues. Moreover, the purchasing power in the region is relatively low due to the high unemployment and the low wages (Heuer, 2018). With a gross monthly salary of 24.482 CZK in 2016 (CSZO), the Ustecky region registers the lowest wages in Czechia (Heuer, 2018). This can primarily be attributed to the low-value activities in the region. Next to the coal industry, the region namely focuses on the production of automobile parts, metal, machinery, and chemicals (Schulz et al., 2018, Heuer, 2018). Additionally, foreign direct investments are in regional decline, which is considered one of the most significant growth factors for Czech regional economies (European Commission, n.d.-c). Due to the open-pit mining, the region's environment was severely damaged, consequently, high recultivation costs are expected. However, Czech companies are legally obliged to bear recultivation costs, hence transitional challenge is not expected in the region unless the polluters are unable to pay (Heuer, 2018).

Moreover, the Ustecky region faces challenges regarding its regional competitiveness. Despite an increasing number of migrants after 2016, the region is characterized by emigration, especially among young people and women (Kuchař & Balek, 2019). This out-migration is linked to the absence of employment, weak social and healthcare, a high crime rate, and the highest mortality rate in the Czech Republic (Heuer, 2018; Schulz et al., 2018). The absence of potential jobs is likely to remain if unmitigated, since the low educational level in Ustecky discourages businesses to settle (Heuer, 2018). Moreover, the region is characterized by low R&D capacities, which also decreases regional innovation capacity. The lack of economic diversity, emigration, and lack of alternative employment are therefore likely to be exacerbated by the transition.

To conclude, in the Ustecky region the four socio-economic transition challenges a) regional clustered job losses, b) increasing inequality, c) lack of financial resources, and d) reduced regional competitiveness are present in the coal region.

5.2 The Ustecky Region's TJTP measures to mitigate the transition challenges

To answer the second sub-question, the preliminary TJTP of the Ustecky region (ICUK, 2021) in the version from the 30th June 2021 and the preliminary TJTP (MMR, n.d.) by the Czech Ministry of Regional Development were analyzed. However, the TJTP by the MMR (n.d.) summarizes partly the TJTP of the Ustecky region, thus this analysis focus on the latter.

The proposed strategy in TJTP of the Ustecky region is built on four pillars, namely (1) economic diversification, and the stabilization and climate adaptation of key industries, (2) reskilling of workers with an emphasis on resilient skills and special attention to vulnerable groups, (3) reducing the dependence on fossil fuels by ensuring clean energy, and (4) revitalization of former coal mining pits (ICUK, 2021). Thereby, all main priorities proposed in the Regulation establishing the JTF are covered in the Ustecky region's proposed transition plan. Altogether, the plan contains fourteen strategic objectives (Figure 2) which are based on the socio-economic transition challenges in the Ustecky region (ICUK, 2021).

Figure 2: Strategic Objectives of the TJTP in the Ustecky Region (retrieved from ICUK, 2021, p. 30)

Global Goal	The transformation begins a new story for the region, based on the knowledge and creativity of its residents and entrepreneurs, using clean energy and new technologies to create quality and sustainable living conditions for future generations.			
Areas of interest (priorities)	I. Entrepreneurship, research, Innovation	II. Competent People and Smart Region	III. New energy and resource efficiency	IV. Revitalised areas 21. centuries
Specific objectives	<p>SC I.1: Increasing the innovation performance of the region, strengthening research and innovation capacity with emphasis on the region's areas of specialization</p> <p>SC I.2: Increase competitiveness of SMEs</p> <p>SC I.3: Stabilisation and development key sectors for transforming the economy</p> <p>SC I.4: Development of cultural and creative industries and their involvement in the overall development of the region</p>	<p>SC II.1: Improving access to quality services and formal and further education infrastructures in the region's areas of specialisation</p> <p>SC II.2: Increasing employment and labour market employability of workers</p> <p>SC II.3: Increased use of digitalisation for efficient and comprehensible public services to citizens</p> <p>SC II.4: Increasing social cohesion and community development in communities</p>	<p>SC III.1: Development of knowledge, technologies, systems and clean energy infrastructures</p> <p>SC III.2: Development of new energy sectors</p> <p>SC III.3: Community development Energy</p> <p>SC III.4: More efficient use of resources, transition to a circular economy</p>	<p>SC IV.1: Improving the usability of the area affected by coal mining for new activities</p> <p>SC IV.2: Increased exploitation and transformation of potential industrial heritage of the region</p>

Figure 2 Strategic Objectives of the TJTP in the Ustecky Region (retrieved from ICUK, 2021, p. 30)

To counteract the transitional challenge of regional clustered job losses, various measures are envisaged within the two TJTPs. Firstly, jobs should be created by supporting SMEs to diversify the economy (ICUK, 2021; MMR, n.d.). Investments should focus on smart specialization which should lead to the creation of new innovative businesses (ICUK, 2021). Related measures envisaged in this area are among others opening new markets, direct investments in the fixed capital of enterprises, and other tools for setting-up SMEs (ICUK, 2021, MMR, n.d.). Since SMEs alone cannot replace the discontinuation of the coal sector, the third objective mentioned is the stabilization and development of the region's key sectors. Proposed measures include investments in the fixed capital of the traditional industries (chemicals, glass, porcelain, and engineering), and the modernization and digitization of business infrastructure and brownfields (ICUK, 2021). Moreover, new jobs should be created by investing in CCIs (Goal 4), increasing the R&D staff in the region (Goal 9), establishing a hydrogen economy (Goal 3), and facilitating engineering work in former coal mining pits (Goal 13) (ICUK, 2021). The creation of new renewable energy sectors such as sustainable lithium

and battery chain helps create new employment opportunities. Regarding reskilling, mainly the goals and measures related to the category of Competent People and Smart Regions are of relevance (ICUK, 2021). The upskilling and retraining of coal workers should be facilitated by setting up counseling services, supporting educational facilities to better match the needs of the changing labor market, and supporting students in the acquisition of entrepreneurial competencies (ICUK, 2021, MMR n.d.). Moreover, the access to education and quality services should be improved (Strategic goal 5) by providing realistic requirements and skillsets for future students and increasing the provision of infrastructure ensuring equal access to education (ICUK, 2021, MMR, n.d.). In the field of CCIs, training and self-employment should be supported which will also lead to increased competencies (ICUK, 2021).

The TJTP plans to mitigate rising inequalities mainly with objective 8 of the TJTP for the Ustecky region ((ICUK, 2021), by increasing social cohesion and community development. This should be realized by providing stability in quality housing, including citizens in the regional planning, and by increasing tolerance, emplacement, and volunteering. Proposed measures include investments in community-based services, creating new social housing capacity in former coal mining pits, and providing counseling services for debts and housing loss (ICUK, 2021). To identify further needs research needs to be conducted. Moreover, social inclusion is expected to reduce social inequalities and the region wants to develop community energy (Strategic Objective 11). This should increase energy efficiency and make energy as a resource accessible to all (ICUK, 2021). Moreover, equal access to education and the acquisition of resilient key competencies should be ensured and stakeholders from the CCI included in the planning of sustainable development of municipalities and the resocialization of brownfields (ICUK, 2021).

The lack of funding during the coal phase-out is mainly mitigated by creating new economic sectors such as renewable energies (lithium, hydrogen, etc.), or the establishment of CCIs envisaged in the former coal mining pits (ICUK, 2021). Additionally, the TJTP plans on

supporting digital innovation in SMEs, opening up new markets, and transforming the industrial heritage into cultural monuments to attract tourists (ICUK, 2021). These activities are expected to create funding through tax revenues. Moreover, the TJTP generally secures funding from the EU, which is necessary for restructuring the economy. Overall, all measures mentioned aim to attract private investments to raise the economic competitiveness of the region (ICUK, 2021). Moreover, a new regional fund will be created based on the decreased costs of energy savings, that are envisaged in the TJTP.

To increase regional competitiveness, the TJTP foresees various interventions. Firstly, the region's innovation and research capacity should be increased (ICUK, 2021). Included in this, are the sub-goals of providing quality research, increasing the number of innovative and competitive forms, and developing a regional innovation ecosystem (MMR, n.d.). To achieve that, the proposed measures include the creation of new R&D centers and additional investments into the related infrastructure that supports entrepreneurship and innovation (ICUK, 2021). Innovative products and processes should be introduced into regional businesses, and cooperation between businesses and R&D centers should be facilitated to ensure knowledge transfer (ICUK, 2021). Moreover, the innovation capacity should be increased through networks in the CCI and new green energy sources in the region such as the hydrogen economy. Regarding the latter, pilot projects, and infrastructure should be developed which increase competitiveness (ICUK, 2021). Moreover, investments in the leisure, and CCIs should be made to increase regional competitiveness. Linked to that is also the construction of backbone infrastructure, especially in terms of digital connectivity and the protection and development of industrial heritage (ICUK, 2021). Additionally, the regional industrial heritage should be transformed (Strategic Objective 14) through digitization, nature trails, and cycling paths, and by investments in the revitalization of the industrial monuments. By improving these soft location factors, also brain drain should be prevented (ICUK, 2021). Lastly, regional competitiveness should be increased in the area of education, where investments in the

construction and equipment of educational facilities should be made, schools should be digitized, new curricula developed, and more learning and vocational activities should be provided and networks facilitated to connect actors from the educational sphere with businesses (ICUK, 2021). Furthermore, public administration services should be digitized based on the SMART Cities and regions principle (ICUK, 2021).

5.3 CBC measures in the Interreg Program affecting the Transition Challenges

5.3.1 CBC measures to affect the Transition Challenge: Job losses

Following the theoretical framework, it was expected that CBC affects the transition challenge of job losses by creating new jobs, and reskilling workers with the four CBC measures business cooperation, educational exchanges, training programs, and enhanced cross-border commuting (see Chapter 2.4). Additionally, further CBC measures were found in the Interreg program that are expected to have a positive effect on the transition challenge, namely qualification of workers, cooperation of labor market actors, job creation, and development of competencies. In the following section, the related CBC initiatives and goals of the Interreg Program are summarized.

In the program area, there are already many existing structures that facilitate business exchanges and cooperation via entrepreneur travel, cooperation fora, and technical events, e.g., the Biannual Saxon-Czech Entrepreneurs Club for businesses, stakeholders from higher education facilities, ministries, tourism, and agencies (Metis, 2020). However, there is still a need to intensify business cooperation on the level of SMEs as only a small number of SMEs are active across borders (Metis, 2020). Therefore, joint initiatives on the level of SMEs are envisaged to help with the capacity building of SMEs (Metis, 2020) which in turn affects job creation.

There are also many educational exchanges in the program area ranging from early childhood education facilities, and universities, school partnerships, and school cooperation

projects to improve career guidance, vocational training, and language competencies (Metis, 2020). These measures were also foreseen in the Thematic Goal 10 (investments in education, training, and lifelong learning) of the Program Document (SN-CZ, 2015). The variety of CBC projects in the field of education help to improve educational offers and qualification of students, especially in the field of digitization, environmental consciousness, language skills, and interculturality (Metis, 2020). Language and intercultural competencies also make up a focal point for the Thematic Goal 10 in the Program Document (SN-CZ, 2015) and Euroregion projects on intercultural education (Elbe-Labe, 2018). These competencies are required in the future and will help to promote high-quality and sustainable employment across borders, which is seen as one main intervention area in the Interreg program (Metis, 2020).

Included in this is also the goal to improve the labor market, career guidance, vocational training, and recognition of professional qualifications across borders (SN-CZ, 2015). This CBC goal is the result of the shared challenges to attract qualified workers in face of the brain drain and demographic change (Metis, 2020). The existing educational exchanges, the transfer of knowledge in the area of education, and the development of joint solutions to support the transition of students into the labor market help with the provision of qualifications for workers (Metis, 2020). In the Program Document, it was also aimed at creating transparency regarding awareness of educational and training opportunities, educational qualifications, and employment opportunities (SN-CZ, 2015). Particular attention was paid to creating equal working opportunities for men and women (SN-CZ, 2015). Also, in the Euroregion Elbe-Labe, projects in the field of joint training are facilitated (Elbe-Labe, 2016). However, there remains room for improvement in the area of recognition of professional qualifications, matching the contents of the training courses, development of concrete supplementary courses, and a joint cross-border vocational training fully recognized in both countries (Metis, 2020). Nevertheless, CBC initiatives help to provide a qualified workforce which also indirectly supports job creation.

This added value by CBC can provide is also supported by joint training endeavors in the program area (Metis, 2020). Among others, there are CBC projects in the field of fire protection, and rescue service, and plans for the introduction of cross-border dual vocational training (Metis, 2020). These joint training projects can help with reskilling coal workers as well.

Additionally, jobs are created by cooperation projects to develop smart grids based on renewable energy in the border region, pilot projects in the field of circular economy, and opening up the German labor market for inhabitants of the Czech border regions (Metis, 2020).

The latter is mainly possible because of the enhancement of cross-border commuting, which adds value to businesses, employees, and job seekers (Metis, 2020). Next to the removal of language, infrastructural, and qualification barriers, cross-border commuting also faces the challenge of having negative effects on the Czech regions since the commuting is more one-sided from Czechia to Saxony (Metis, 2020). In the years between 2015 to 2018, the number of Czech citizens working in Saxony has doubled to 10.097 workers which can mainly be attributed to higher wages in Germany (only 612 Germans commuting to Czech regions) (Metis, 2020). Cross-border commuting, therefore, only adds value to the provision of work for Czech people, is the development of the Saxon-Czech labor market is balanced. This is tried to be ensured by the cooperation of labor market actors across borders including public administrations, trade unions, and employers (SN-CZ, 2015). However, the negative consequences CBC might have on the Czech regions highlight the importance of taking a cross-border perspective.

5.3.2 CBC measures to affect the Transition Challenge: Rising social inequality

CBC was only theoretically expected to mitigate the improve the transition challenges of rising social inequality through social cohesion. The theoretical assumption of inequality mitigation being mainly facilitated with national strategies was also highlighted in the Interreg program document (Metis, 2020). Especially as the Border Orientation Paper of the

Commission concerning the Germany-Czech Republic (May 2019) determines that poverty alleviation is not considered an intervention area of the Interreg Program (Metis, 2020).

Concerning the development of social cohesion, the program area faces difficulties as the economic performances are very different and language barriers exist across the border (Metis, 2020). To increase the trust and social cohesion between inhabitants, people-to-people projects are conducted through the Small Project Fund of the Euroregions (Metis, 2020). Overall, this enhanced cohesion makes up a main intervention area in the Elbe-Labe Euroregion and becomes visible in projects in the area of humanitarian, social, and educational aspects. (Elbe-Labe, 2003).

Measures to include vulnerable groups include gender, race, ability, and religious mainstreaming in the planning and implementation process of CBC (SN-CZ, 2015). Besides this provision, only in the field of educational CBC projects the more active inclusion of girls in STEM subjects to alleviate the gender gap in the future aims at the inclusion of vulnerable groups in the Interreg Program (Metis, 2020). And as mentioned before, equal employment opportunities for men and women should be created (SN-CZ, 2015).

Concerning energy efficiency projects that help to reduce energy costs, which are the main reason for rising inequality in the transition, do exist in the Interreg Program. However, the fund is not absorbed as there is a lack of expertise, legal requirements, and financing (Metis, 2020). In any case, however, national funds are needed to make the program energy-efficient as the high need for investments can only be provided by the Interreg Fund to a very small extent (Metis, 2020).

5.3.3 CBC measures to affect the Transition Challenge: Lack of funding

To compensate for the lack of funding, CBC is assumed in the theoretical framework to have positive effects by accessing additional funds, also through improved advocacy, creating new

jobs, reducing planning uncertainty, and attracting funding for research and innovation projects.

Since the Interreg program is one of the EU's key tools to support CBC through project funding (Blanco, 2022), it provides in general additional funding for the region's development. In case the Interreg program has overlapping goals and measures with the Ustecky region's transition strategy, it also provides an additional source of funding for the transition itself. , cross-border initiatives for SMEs are also funded to a small extent by the German Ministry for Federal Research and the Wirtschaftsförderung Erzgebirge which also adds value for the Czech regions in the Interreg program (Metis, 2020).

Furthermore, CBC improves regional advocacy with business cooperation projects and sectoral networks across borders. This in turn will lead to a more positive image of the region and make it more attractive for businesses and qualified workers (Metis, 2020). Therefore, the Interreg program aims at the further creation and development of sectoral networks connecting interest groups, innovation agencies, business hubs, and research institutions (SN-CZ, 2015).

Moreover, additional sources of funding via tax revenues and increased purchasing power are provided by the indirect job creation via CBC, which was described earlier (Subchapter). Especially, cross-border tourism and SME support are priorities (Metis, 2020). The latter is facilitated through joint initiatives aiming at increasing the innovation capacity and digitization of SMEs. Projects, therefore, include business cooperation projects and sectoral networks (Metis, 2020).

CBC can also improve planning uncertainty by improving governance across borders. This is mainly reflected in the Thematic Goal 11 of the Program Document, which aims at improving institutional capacities and efficiency in the public sector (SN-CZ, 2015). Cooperation programs in this field cover many thematic areas, like the public administration cooperation project "CLARA III" (Metis, 2020). The close cooperation in the program area is visible through permanent CBC working structures, such as the Euroregions, (Elbe-Labe, 2003). The

goal of the Euroregion Elbe-Labe is hence the joint regional planning, to reduce uncertainty. Other legal agreements include e.g., the Joint Declaration on cooperation that was renewed in, 2013 by the Regional Directorate of Saxony with the Ústecký region (Metis, 2020). Nevertheless, there is room for improvement, which is mainly due to the different competencies of the two regions. To improve cross-border governance, Interreg wants to collect cross-border data which will lead to more informed policies and will continue to reduce existing barriers (Metis, 2020). Nonetheless, CBC reduces planning uncertainty in the border region.

However, CBC is not a useful instrument to improve innovation and research infrastructure as there is not enough expertise and resources on the administrative level to manage and control projects (Metis, 2020). However, CBC can improve innovation capacity in the border region, which will be reflected in the next sub-chapter.

5.3.4 CBC measures to affect the Transition Challenge: Reduced regional competitiveness

According to the framework, the socio-economic challenge of reduced regional competitiveness can be increased with the CBC measures of increasing innovation capacity, infrastructure development, and cultural projects and exchanges. The Interreg Program of Saxony-Czech Republic additionally included measures in the field of tourism and economic diversification, which also help to increase regional competitiveness.

Generally, the program area is characterized by strong differences in regional competitiveness between Saxony and the bordering Czech regions (Metis, 2020). These differences can mainly be attributed to Saxony being a strong innovator because of its higher R&D expenses and infrastructure, especially in terms of higher education facilities compared to the Czech regions (Metis, 2020). However, both can improve regional competitiveness as there is a lack of lifelong learning education facilities (Metis, 2020, SN-CZ, 2015).

Moreover, the program area is faced with the challenge of brain drain and a lack of young people, especially women, although the net emigration is not negative as many migrants moved to the area around 2015 (Metis, 2020). As the regions face the same problem, joint CBC measures can improve the competition factor from the program area in general.

The innovation capacity of the area can be increased through exchanges, where know-how and best practices are shared. Typical fora there include business cooperation projects and network building (see above), joint pilot projects to introduce innovations into businesses (especially in the field of smart and renewable energy grids and circular economy), and the connection of research actors in educational exchanges of higher education facilities (especially in the areas of environment and building research (Metis, 2020, SN-CZ, 2015)). Additionally, the innovation capacity and therefore regional competitiveness is increased through the joint use of R&D infrastructure across borders, which also helps the region's smart specialization, and the high number of transnational innovation projects (34 projects), such as the Expert Network on Textile Recycling (Metis, 2020). Also, via the support of SMEs and their cooperation, the lack of R&D capacity can be alleviated, and thereby innovation capacity increased. And the defined action field of the development of a joint digital innovation culture in public entities and educational facilities across borders also shows the potential of CBC to increase innovation and regional competitiveness (Metis, 2020).

Additionally, the region becomes attractive through economic diversification. The Interreg Program supports this through industry networks across borders and joint smart specialization projects in innovative fields such as textiles, mechanical engineering, or nanotechnologies (Metis, 2020, SN-CZ-2015)). Economic diversification is envisaged by both regions as they are characterized by a strong industrial sector and more importantly a declining coal sector.

Regional competitiveness of the program area is also increased by joint infrastructure projects, which are also a priority of the Elbe-Labe Euroregion (Elbe-Labe, 2003). Ameliorating the infrastructure can also help to unlock potential in the cross-border labor market (SN-CZ,

2015). The infrastructure in the region still needs many investments as the streets and train connections are in a bad condition, CBC, however, can cover only a small fraction of it (Metis, 2020). Nevertheless, both regions follow the goal to develop sustainable, resilient, smart, and intermodal mobility via joint research, feasibility studies, and planning of infrastructure for public transport, industrial heritage, national parks, and tourism along the shared border (Metis, 2020, SN-CZ, 2015). Within these joint initiatives, sustainable mobility is promoted.

The program area's competitiveness is also increased through cultural cooperation. According to the Interreg program document, there are many cooperation projects in the field of sports and leisure for students, joint expositions, and cultural events that are facilitated by the Euroregions (Metis, 2020). Overall, there are many cultural projects in the area of culture, leisure, and sports within the Euroregion. The Euroregion organized e.g., Czech-German culture days (Elbe-Labe, 2019) or a joint museum platform (Elbe-Labe, 2021). Moreover, joint research on cultural heritage and joint initiatives for preservation, maintenance, and education of the shared cultural heritage are supported by Interreg (Metis, 2020).

By maintaining shared cultural heritage, tourists are also attracted (SN-CZ, 2015). The tourism sector, especially in the cross-border tourism region of Saxon-Bohemian Switzerland, is important as it supports regional development strongly (Metis, 2020). Interreg helps to connect stakeholders across borders, and thereby improves cross-border tourism, also by making it more sustainable. Joint projects include the development of touristic infrastructure, cross-border mobility concepts, digitization and marketing, joint training of employees in the tourism sector, and harmonizing tourism strategies (Metis, 2020, SN-CZ, 2015).

Moreover, the region's competitiveness is increased by CBC initiatives of educational facilities that improve the educational quality and access to professional qualifications, joint initiatives in the health sector (Elbe-Labe, 2019), water management, and biodiversity protection (Metis, 2020).

5.4 Conclusion of the Analysis

This analysis section aimed to examine whether provisions from the theoretical framework apply in the case of the Ustecky region. Therefore, the socio-economic transition challenges in the Ustecky region were identified, which align with the theoretically derived challenges of (a) job losses, (b) increasing inequality, (c) lack of financial resources, and (d) reduced regional competitiveness (Column 1 in Table below).

Table 3: Summary of the Analysis based on the theoretical framework (own compilation)

Socio-Economic Transition Challenges in the Ustecky region	Which transition challenges CBC in the framework of Interreg Program can have an effect upon	How CBC affects the challenge exactly
Regional clustered Job losses	Providing new regional jobs	<ul style="list-style-type: none"> - Business and educational exchanges create capacities that lead to job creation - SME support - Cross-border tourism - enhanced cross-border commuting opens up new employment opportunities in the region - CBC pilot projects on smart grids, circular economy
	Reskilling of workers	<ul style="list-style-type: none"> - Joint training programs e.g., in the field of nursing, disaster control, tourism - Plans to introduce cross-border dual vocational training
	Resilient competencies	<ul style="list-style-type: none"> - Language, intercultural, digital skills and environmental consciousness are mediated within educational exchanges
	Providing counseling	<ul style="list-style-type: none"> - CBC educational projects focus on career guidance
	Raising levels of qualification of workers	<ul style="list-style-type: none"> - CBC projects to support the transition from students into labor market - Matching curricula, easier recognition of diploma
Increasing inequality	Improving social cohesion	<ul style="list-style-type: none"> - People-to-people projects are conducted with the help of the Small Projects Fund within the EU

	Support women and other vulnerable groups	<ul style="list-style-type: none"> - Gender, Race, Ability, and Religious Mainstreaming in the planning and implementation process of CBC - Within educational projects: more active inclusion of girls in STEM subjects
	Increasing energy efficiency	<ul style="list-style-type: none"> - CBC projects to reduce energy consumption, but little absorption
Lack of financial resources	Providing new jobs	<ul style="list-style-type: none"> - Business and educational exchanges create capacities that lead to job creation - SME support - Cross-border tourism - enhanced cross-border commuting opens up new employment opportunities in the region - CBC pilot projects on smart grids, circular economy
	Facilitating access to additional funds (EU)	<ul style="list-style-type: none"> - Interreg Program in general provides additional funding - Czech Regions also benefit from German regional development funds as some CBC projects are funded - Improving advocacy through business cooperation projects and sectoral networks across borders
	Provide planning security	<ul style="list-style-type: none"> - Improving governance across borders with the help of public administration cooperation, Euroregions - Providing a stable environment by legally establishing cooperation - Cross-border data collection to make more informed policies
Reduced regional competitiveness	Creating innovation capacity	<ul style="list-style-type: none"> - Transfer of knowledge in CB networks and through business and educational exchanges - Joint pilot projects in the field of renewable energies - Support and cooperation of SMEs also increases innovation capacity - Joint innovation projects, also in the field of public administration and education - Joint use of R&D infrastructure
	Economic diversification	<ul style="list-style-type: none"> - Sectoral networks in innovative fields help to diversify the economy
	Improving soft location factors:	<ul style="list-style-type: none"> - Joint infrastructure projects - Cultural cooperation and maintenance of joint cultural heritage - CBC projects in the realm of sports and leisure - Cross-border tourism

		<ul style="list-style-type: none"> - CBC between educational facilities improves educational offer - Joint initiatives in the health sector, water management, and biodiversity protection increase the attractiveness of the area
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Consequently, the transitional measures for the Ustecky region within the preliminary TJTP were summarized. In the second column in the table below, only those measures were included that CBC can influence, which is based on the comparison of the goals and measures of the TJTP and the Interreg Program in Table Overlap (Appendix). When comparing this column with the theoretical framework it is important to note that CBC can affect more measures and goals related to the transitional challenges than was expected. Namely, CBC can support counseling for workers, improve the qualification of workers, support women, and economic diversification. Also, concerning the mechanisms of how CBC can affect these challenges, the case study provided a higher number and variety than it was expected (see Column 3 of Table 3). To conclude, there is a high overlap between the theoretical framework and the case study of the Ustecky region.

6. Conclusion

Both CBC and the JTF aim at increasing the EU’s cohesion, with CBC being already more established than the recently introduced JTF. Therefore, the goal of this research was to shed light on the potential of CBC to mitigate the negative socio-economic effects of the energy transition. To answer the related research question, the three sub-questions needed to be answered. Since the JTM wants to mitigate the socio-economic challenges arising during the energy transition, the first sub-question aimed at identifying the particular socio-economic challenges coal regions face. The relevant literature discussed in section 2.2. showed that coal regions generally face the four main challenges of job losses in the coal sector, increasing

inequality since the transition's burdens are unequally distributed, lack of financial resources due to reduced tax revenues and high restructuring costs, and reduced regional competitiveness. These four challenges are also already present in the Ustecky region and will be exacerbated with the ongoing coal phase-out.

Moreover, desk research and related document analysis were conducted to identify the TJTP and CBC measures and goals concerning the transition challenges. By identifying the TJTP measures, a sub-question was answered, which aimed at the transition challenge mitigation with the help of the EGD's JTF in the Ustecky region. The question about the CBC's role in transitioning the Ustecky region was finally answered based on the summary of CBC measures and the juxtaposition of the latter with the TJTP measures.

Based on these sub-questions, it can be concluded that CBC alone cannot cause structural changes on the macro-level (Metis, 2020). Nevertheless, the analysis showed that CBC can contribute in various ways to mitigate the four transition challenges and thereby provide stimuli for a change on the macro-level.

Particularly, it helps with increasing the regional competitiveness and financial resources, as the transfer of know-how and the opening up of the market across borders raises the innovation capacity of enterprises and improves R&D activities. But also, cooperation in the CCI and tourism sector help to make the region more attractive and also economically stronger. Since the EU supports cross-border endeavors financially under its cohesion policy, the additional funds also make up a strength of CBC's contribution to a region's Just Transition.

In the field of job loss mitigation, CBC influences more indirectly the creation of alternative employment or the reskilling of workers who will lose their jobs in the upcoming years. However, due to CBC's various educational projects, future workers will be better adapted to a resilient labor market with intercultural, language skills, and environmental consciousness. This will help to ensure high levels of employment in the future.

However, in the area of reducing social inequalities, CBC has more limited capacities. CBC can mainly help increase social cohesion, which is important for a region's development. But redistribution which is seen as the most effective measure to reduce inequalities cannot be facilitated through CBC. This is mainly due to the fact, that welfare and redistribution measures are still the main competence of nation-states, which is why other modes of governance have a very limited leeway in this area. Since one main component of the Just Transition concept, which the JTF is based on, is, however, the provision of a sustainable regional economy with reduced inequality (Galgóczi, 2019), the CBC's contribution to a Just Transition is limited. Nevertheless, this research has shown that CBC can help in various ways to facilitate the energy transition in general. A cross-border perspective, therefore, helps to unlock potentials for the coal region's transitions. This contribution could be increased even further if CBC programs would focus stronger on the inclusion of vulnerable groups. Moreover, the intervention area of poverty eradication could be included in CBC programs by the EU, which would also help to make the CBC's contribution to the transition juster.

However, the findings of this research are limited. Firstly, the limitation is placed by the research design of a single case study. This means that findings are hard to apply to other regional transitions given that the phenomenon is studied in a very specific context. Therefore, the external validity is limited. Additionally, the case study research design implicates that the study is also hard to repeat and findings might be biased which affects the internal validity. By using several types of sources in a triangulating way it was tried to mitigate this threat. Secondly, the findings are limited due to time and workload constraints posed by the framework of a bachelor thesis. For future research, it would be interesting to include more cases to increase the external validity. Moreover, an evaluation of the implementation of the CBC and the TJTP measures could provide clearer answers to the research question.

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Data Appendix

A. Codebook

Transition Challenges: codes that describe the socio-economic challenges caused or exacerbated by the transition process in the Ustecky region

Transition Challenge	Description and Alternative Codes	Author
Job losses	Threat of job losses in the mining sector, ongoing trend of job reduction, high unemployment	European Commission (n.d.-c); Schulz et al. (2018); Heuer (2018);
Inequality	The proportion of socially disadvantaged people in the total population is comparatively high, women earn less and are more affected by unemployment, mostly men work in mining sector, rising energy prices	Schulz et al. (2018); Kuchař & Balek (2019)
Lack of financial resources	High recultivation costs, Small economic diversity (Reduced innovation capacity, strong industry sector, No support of alternative business development of SMEs), low skills/ low added value, low wages and low purchasing powers, declining FDI, high unemployment, economically disadvantaged, low absorption of EU funds	Schulz et al. (2018); Heuer (2018); European Commission (n.d.-c); Kuchař & Balek (2019)
Regional competitiveness	Small number of higher education institutes, low education discourages businesses to settle in the ustecky region, small innovation capacity, little research and development capacities, high crime rate, Weak coverage of social and health care, highest mortality rate, emigration	Schulz et al. (2018); Kuchař & Balek (2019); Heuer (2018)

TJTP Measures and Goals: codes that describe the goals and measures related to the socio-economic transition challenges (based on MMR, n.d.; ICUK, 2021)

Codes: Transition Challenge	Subcodes: TJTP measures	Examples of TJTP measures
Mitigating Job losses	Job creation	“The creation of innovative companies in particular, which will be one of the sources of restructuring of the economy” (ICUK, 2021, p. 13)
	Reskilling	“Education for the new economy and preparing people for the changing labour market, from initial and lifelong learning to specific skills and retraining needs.” (MMR, n.d., p. 8)
	Setting up counseling services	“Social counselling for workers”(MMR, n.d., p.27)
	Support of business formation	“Increase the number of new companies with growth potential “(ICUK, 2021, p.31)
	Resilient competences	“[...]to meet the wide range of realistic requirements and skills of future students, as well as the current and future needs of society in the region.” (ICUK, 2021, p.52)
Mitigating Inequality	Social cohesion	“Increase social cohesion and community development in municipalities” (ICUK, 2021, p.60)
	Support women or other vulnerable groups in worker qualification	“[...] programmes to prevent and address the consequences of social exclusion.” (MMR, n.d., p. 8)
	Other	“Supporting the creation of new housing capacity” (ICUK, 2021, p.60)
	Energy efficiency	“The aim of the interventions is to increase the share of renewable energy sources, introduce energy efficiency measures and integrate new and existing energy sources. “(ICUK, 2021, p.62)
Mitigating Lack of financial resources	SME support	“Development of incubation and consultancy activities, especially for SMEs” ((MMR, n.d., p. 8)
	Additional funds	“[...] private investment of comparable size to public support” (ICUK, 2021, p.44)
	Plannning security	
	Innovation capacity	“Increasing the innovation performance of the region, strengthening research and innovation

Mitigating Regional competitiveness		capacities with emphasis on areas of specialisation of the region” (ICUK, 2021, p.30)
	Leisure (Culture)	“Development of cultural and creative industries and their involvement in the overall development of the region” (ICUK, 2021, p.51)
	Education	“Building internal connectivity of schools and connecting schools to high-speed internet, including addressing cyber security and related education.” (MMR, n.d., p.26)
	Communication	“Coverage of the territory with the signal of the communication network for the Internet of Things.” (ICUK, 2021, p.70)
	Transport	“Construction of technical and transport infrastructure [to reuse coal mining pits]” (MMR, n.d., p.26)

CBC Measures and Goals: codes that describe the CBC goals and measures related to the socio-economic transition challenges (based on Metis, 2020;

Code: Transition Challenge	Sub-codes: CBC measures affecting the Transition Challenges	Example of CBC Measure
Mitigating Job losses	Business cooperation	„[...] Unternehmerreisen, Kooperationsbörsen und fachliche Veranstaltungen [...]“ (Metis, 2020, p.26)
	Educational exchanges	„[...] stabile Zahl der grenzübergreifenden Schulpartnerschaften.“ (p. 17)
	Training programs	„[...] Umsetzung gemeinsamer Schulungsmaßnahmen von Tourismusakteuren (Metis, 2020, p.100)
	Enhanced cross-border commuting	„Eine Förderung der Arbeitskräftemobilität, die beiden Seiten der Grenze und damit dem Gesamttraum zu Gute kommt, ist ein Mehrwert [...]“ (Metis, 2020, p.74)
	Qualification of workers	„Hier sollen insbesondere der Personalaustausch und Praktika, gemeinsame Sprachausbildung von pädagogischen Fachkräften sowie die Weiterqualifizierung im Hinblick auf die Methodik des frühkindlichen Spracherwerbs in Kindertageseinrichtungen unterstützt werden.“ (p.70)
	Cooperation of Labor Market Actors	„Dazu sollen sowohl die Zusammenarbeit von Bildungseinrichtungen und Arbeitsmarktakteuren auf allen Ebenen, [...]“ p.69

	Job creation	„Gemeinsame Bildungsaktivitäten im Rahmen des lebenslangen Lernens führen zu besseren Chancen auf dem gemeinsamen Arbeitsmarkt und wirken sich dadurch positiv auf das Beschäftigungswachstum aus.“(Metis, 2020,
	Development of resilient Competencies	„Grenzüberschreitende Förderung von hochwertiger und zukunftsfähiger Beschäftigung“ (Metis, 2020, p.87)
Mitigating Inequality	Social cohesion	„Mit der Stärkung des lebenslangen Lernens wird zum sozialen Zusammenhalt und zum interkulturellen Dialog beigetragen.“ (p.68)
	Inclusion of vulnerable groups	„[...] Maßnahmen gegen jede Form der Diskriminierung aufgrund des Geschlechts, der Rasse oder ethnischen Herkunft, der Religion oder Weltanschauung, einer Behinderung, des Alters oder der sexuellen Ausrichtung während der Vorbereitung und Durchführung des Kooperationsprogramms zu treffen.“ (p.126)
	Energy efficiency	„Kooperationsprojekte können Impulse setzen, indem sie praktische Lösungsansätze für den Ausstieg aus fossilen Energiequellen, für die Nutzung erneuerbarer Energiequellen und die intelligente Vernetzung thematisieren und in der Praxis eine positive Veränderung anregen können.“ (Metis, 2020, p.55)
Mitigating Lack of financial resources	Planning security	„Für die weitere Entwicklung des Programmgebietes ist deshalb eine enge grenzübergreifende Zusammenarbeit im Bereich Regionalplanung eine wichtige Voraussetzung.“ p.18
	Additional funds	„[...] Programm „WIR!“ – Wandel durch Innovation in der Region“ des deutschen Bundesforschungsministeriums (BMBF) mit Beteiligung der Wirtschaftsförderung Erzgebirge.“(Metis, 2020, p. 26)
	Job creation	„Gemeinsame Bildungsaktivitäten im Rahmen des lebenslangen Lernens führen zu besseren Chancen auf dem gemeinsamen Arbeitsmarkt und wirken sich dadurch positiv auf das Beschäftigungswachstum aus.“
	SME support	“ zielt auf die Stärkung der Innovationsfähigkeit regionaler Unternehmen – insbesondere kleiner und mittlerer sowie junger Unternehmen, sowie die Sicherstellung einer ausreichenden Qualifikations- und Kompetenzbasis [...] ab.“ (Metis, 2020, p.35)
	Economic diversification	„Hier setzt zudem die komplementäre grenzübergreifende Unterstützung der regionalen Strategien zu intelligenten Spezialisierung an.“ P.17
Mitigating Regional competitiveness	Innovation capacity	
	Infrastructure	„Die grenzübergreifende Zusammenarbeit im ÖPNV wurde in den zurückliegenden Jahren ausgebaut [...]“ p.18

	Cultural cooperation	„Investition in den Erhalt und Schutz, die Förderung und Entwicklung des Kultur- und Naturerbes sowie von Kunstobjekten und Kulturprojekten“ (p.56)
	Tourism	„Erhalt der touristischen Attraktivität durch nachhaltige Aufwertung des gemeinsamen Natur- und Kulturerbes“
	Economic diversification	„[...] gemeinsame Spezialisierungsschwerpunkte, z.B. bei grenzübergreifenden Branchen-Netzwerken in der Textilindustrie [...]“ (Metis, 2020, p.37)

B. List of Documents for Analysis

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C. Table Overlap of TJTP and CBC Measures

Transition Challenge	TJTP (Strategic O	CBC
Job losses		
Job creation	1,2,3,4,5,8, 9-12, 13-14	Indirectly : exchanges, business cooperation, commuting, pilot projects, CBC tourism
Reskilling	2,5,6	Qualification of workers, training
Setting up counselling services	6	
Support of business formation	1	
Resilient competences	6	yes
Inequality		
Stakeholder inclusion	4,5,6,7,8, 13-14	People2people

Support women or other vulnerable groups in worker qualification	Just general provision	Girls education in STEM, mainstreaming
Other (housing capacity, services)	8	
Energy efficiency	9-12	Little use
Redistribution		
Lack of financial resources		
SME support	1,6, 9-12	yes
Additional funds e.g. private investment	Private: 1,2,3,4,5,7,8, 9-12,13-14	EU, advocacy, tourism
Plannning	In general TJTP	Improved governance
Reduced regional competitiveness		
Innovation capacity	1,9-12	Exchanges, joint use of R&D infrastructure, transnational projects, digitization SME, smart specialization
Leisure (Culture)	4, 13-14	Yes (culture, tourism,
Education	5,6	yes
Communication	7, 13-14	
other		Yes (water quality, biodiversity, health)
Transport	13-14	yes